

## **VOLUME 2**

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# **Air Diving Operations**

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**U.S. NAVY DIVING MANUAL**

**EXHIBIT D**

## CHAPTER 7

# Scuba Air Diving Operations

### 7-1 INTRODUCTION

**7-1.1 Purpose.** The purpose of this chapter is to familiarize divers with standard and emergency procedures when diving with scuba equipment.

**7-1.2 Scope.** This chapter covers the use of open-circuit scuba, which is normally deployed in operations not requiring decompression. Decompression diving using open-circuit air scuba may be undertaken only if no other option exists and only with the concurrence of the Commanding Officer or Officer-in-Charge (OIC). Closed-circuit underwater breathing apparatus is the preferred method of performing scuba decompression dives. Operation of open-circuit, closed-circuit, and semiclosed-circuit systems designed for use with mixed-gas or oxygen is covered in Volume 4.

### 7-2 REQUIRED EQUIPMENT FOR SCUBA OPERATIONS

At a minimum, each diver must be equipped with the following items to safely conduct an open-circuit scuba dive:

- Open-circuit scuba.
- Face mask.
- Life preserver/buoyancy compensator.\*
- Weight belt and weights as required.\*\*
- Knife.\*\*
- Swim fins.
- Submersible pressure gauge or Reserve J-valve.
- Submersible wrist watch. Only one is required when diving in pairs with a buddy line.\*\*
- Depth gauge. \*\*

\* During the problem-solving pool phase of scuba training, CO<sub>2</sub> cartridges may be removed and replaced with plugs or expended cartridges that are painted International Orange.

\*\* These items are not required for the pool phase of scuba training.

- Check face mask seal. A small amount of water may enter the mask upon the diver's entry into the water. The mask may be cleared through normal methods (see paragraph 7-7.2).
- Check buoyancy. Scuba divers should strive for neutral buoyancy. When carrying extra equipment or heavy tools, the divers might easily be negatively buoyant unless the weights are adjusted accordingly.
- If wearing a dry suit, check for leaks. Adjust suit inflation for proper buoyancy.
- Orient position with the compass or other fixed reference points.

When satisfied that all equipment checks out properly, the divers report their readiness to the Diving Supervisor. The Diving Supervisor directs the divers to zero their watches and bottom time begins. The Diving Supervisor gives a signal to descend and the divers descend below the surface.

**7-6.3 Surface Swimming.** The diving boat should be moored as near to the dive site as possible. While swimming, dive partners must keep visual contact with each other and other divers in the group. They should be oriented to their surroundings to avoid swimming off course. The most important factor in surface swimming with scuba is to maintain a relaxed pace to conserve energy. The divers should keep their masks on and breathe through the snorkel. When surface swimming with a scuba regulator, hold the mouthpiece so that air does not free-flow from the system.

Divers should use only their legs for propulsion and employ an easy kick from the hips without lifting the swim fins from the water. Divers can rest on their backs and still make headway by kicking. Swimming assistance can be gained by partially inflating the life preserver or buoyancy compensator. However, the preserver must be deflated again before the dive begins.

**7-6.4 Descent.** The divers may swim down or they may use a descending line to pull themselves down. The rate of descent will generally be governed by the ease with which the divers will be able to equalize the pressure in their ears and sinuses, but it should never exceed 75 feet per minute. If either diver experiences difficulty in clearing, both divers must stop and ascend until the situation is resolved. If the problem persists after several attempts to equalize, the dive shall be aborted and both divers shall return to the surface. When visibility is poor, the divers should extend an arm to ward off any obstructions.

Upon reaching the operating depth, the divers must orient themselves to their surroundings, verify the site, and check the underwater conditions. If conditions appear to be radically different from those anticipated and seem to pose a hazard, the dive should be aborted and the conditions reported to the Diving Supervisor. The dive should be aborted if the observed conditions call for any major change in the dive plan. The divers should surface, discuss the situation with the Diving Supervisor, and modify the dive plan.